Please cancel claims 4, 5, and 8-10 without prejudice or disclaimer.

Please amend the following claims.

1. (Amended) A reactor core capable of being mounted in a lower portion of a reactor pressure vessel comprising a core support plate mounted on the lower portion in the reactor pressure vessel and an upper grid disposed on and above the core support plate, said reactor core comprising;

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a plurality of fuel assemblies which are supported by the core support plate and the upper grid so as to be arranged in a square grid form at a certain pitch; and

a plurality of control rods having a cruciform cross-section comprising four blades having a width (B), each of said control rods being adapted for insertion into four adjacent spaces between four fuel assemblies facing each other, wherein a ratio (B/S) of the width (B) of the control rod blades to a surface area (S) of a square having sides each being equal to the pitch between the fuel assemblies is set in a range of 0.06 to 0.08 cm^{-1}.

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6. (Amended) A reactor core as claimed in claim 15, wherein said burnable poison is a gadolinia product, and combined enrichment of gadolinium isotopes with odd mass numbers in said gadolinia product is greater than the enrichment of natural gadolinium.

Please add the following new claims:

B6

15. (New) The reactor core according to claim 1, wherein the fuel assembly includes some fuel rods comprising a fuel composition comprising a nuclear fuel material and a burnable poison, said burnable poison is a gadolinia product containing pure particles or grains of Gd_2O_3, with a diameter in a range of 50 to 200 microns dispersed throughout the nuclear fuel material, and the gadolinia particles or grains have a weight ratio of 15 weight % or more with respect to the fuel composition.

16. (New) A reactor core capable of continuous operation for at least 15 years in a reactor pressure vessel, comprising:

B6 cont'd

fuel rods which are arranged in square lattices at a certain pitch; and

a plurality of control rods having a cruciform cross-section comprising four blades having a width (B), each of the control rods being adapted for insertion into a space between four square lattices of fuel rods, wherein a ratio (B/S) of the width (B) of the control rod blades to an area (S) of a square having sides equal to the certain pitch is set in a range of 0.06 to 0.08 cm^{-1}.